From Autonomy to Accountability: Envisioning AI's Legal Personhood

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Abstract

This paper critically examines the concept of granting legal personhood to artificial intelligence (AI) systems, addressing the challenges and implications within the context of evolving legal and societal frameworks. It navigates through the historical understanding of personhood, the ethical considerations posed by advanced AI capabilities, and the philosophical underpinnings of AI's potential roles and responsibilities in society. By proposing a hypothetical scenario where AI is recognized with specific legal attributes, the study highlights the need for dynamic legal frameworks, international collaboration, and ethical AI development to ensure laws remain relevant and effective. The conclusion advocates for a multidisciplinary approach to crafting adaptable legal structures that acknowledge AI's unique contributions to society while safeguarding human dignity and societal welfare, urging forward-looking policies that balance technological innovation with ethical and legal integrity.

Introduction

Artificial intelligence (AI) has significantly advanced, permeating various sectors like finance, healthcare, and transportation. This increasing autonomy presents challenges to legal systems traditionally based on human accountability. AI unpredictability can be linked to chaos theory, where small changes in complex systems may lead to unpredictable outcomes. This characteristic complicates the anticipation of AI behavior, pressing the need for revised legal standards that address AI responsibility and accountability (Lv et al., 2023). The Turing Test by Alan Turing is a philosophical benchmark for machine cognition, suggesting intelligence in AI if it can mimic human conversation convincingly. Although no AI has definitively passed this test, strides in natural language processing are narrowing the human-machine communication divide (Turing, 2009). Further philosophical discussions by William Lycan and John Searle offer contrasting views on AI personhood. Lycan posits that human-like traits in AI could confer personhood, while Searle argues that simulation of language understanding is not equivalent to true consciousness (Searle, 2009; Solum, 2020). The future of AI development hinges on navigating these philosophical perspectives, informing both technological progression and the ethical recognition of AI as potential persons.

The integration of AI into legal processes has been significantly explored in recent literature. Ashley's work (Ashley, 2017) highlights AI's potential to revolutionize legal analytics, while Banteka (Banteka, 2020) delves into the complexities of AI and legal personhood, a theme further expanded upon by Brown (Brown, 2021) in the context of property ownership. Chesterman (Chesterman, 2020) raises critical questions about the boundaries of AI's legal

personality. The criminal liability of AI poses unique challenges, with Bonfim (Bonfim, n.d.) and Hallevy (Hallevy, 2024) offering perspectives on AI's decision-making and potential frameworks for its legal regulation. The notion of AI as new subjects of law is proposed by Kovacheva (Kovacheva, 2022) and Schirmer (Schirmer, 2020), the latter introducing the concept of partial legal status as a viable approach. From an international law viewpoint, Ivanova (Ivanova, 2019) and Jaynes (Jaynes, 2020) discuss legal personality and AI citizenship, respectively. Kurki's theoretical exploration (Kurki, 2019) and Mullen's spectrumbased view (Mullen, 2021) of legal personhood could inform future AI legislation. Ethical implications are at the core of Bublitz's (Bublitz, 2022) and Carrillo's (Carrillo, 2020) examinations, both essential in the transition from ethics to law. Schwitzgebel (Schwitzgebel, 2023) addresses the "Full Rights Dilemma," and Simmler and Markwalder (Simmler & Markwalder, 2019) provide insights into rethinking AI culpability. Solum (Solum, 2020) completes this review by contemplating the evolution of legal concepts to encompass AI's unique challenges.

Building on the extensive discourse surrounding AI and legal personhood, this work carves out a distinct niche by focusing on the tangible steps towards recognizing AI systems within the legal domain. Diverging from the primarily theoretical or philosophical angles prevalent in existing literature, our research meticulously examines the practical implications of affording legal personhood to AI. By envisaging a hypothetical scenario in which AI is granted legal personhood, we critically analyze the necessary recalibrations within legal systems to acknowledge AI as autonomous, non-human actors. This exploration is anchored around a comparative analysis, which outlines the present legal attributes of humans versus AI and projects how these attributes might transform with AI's potential personhood. Our contribution is pivotal in advancing the debate, offering a structured framework that not only anticipates the evolving capabilities of AI but also addresses the ethical and legal ramifications of their integration into societal structures. Through this, we aim to lay a groundwork for future discourse and legislative action, proposing that AI systems be recognized with a specific set of rights and responsibilities that mirror their unique standing in the technological and social fabric of contemporary society.

This paper progresses from an *Introduction* that frames the debate on AI's potential legal personhood, through *Historical Context and Ethical Challenges of Personhood* and the *Current State of AI*, to a pivotal argument in *Legal Personhood for AI Systems*. It delves into a *Hypothetical Scenario: AI with Legal Personhood*, exploring the implications of such a legal status. The *Conclusions* section synthesizes the discussion, advocating for legal systems to evolve in tandem with AI advancements, emphasizing collaborative and adaptive approaches.

Historical Context and Ethical Challenges of Personhood

The concept of personhood has evolved from ancient times to encompass a range of entities beyond human beings. This evolution reflects changes in legal, philosophical, and ethical thinking, with significant implications for how society recognizes and protects the rights of both human and non-human entities. In ancient civilizations, personhood was intertwined

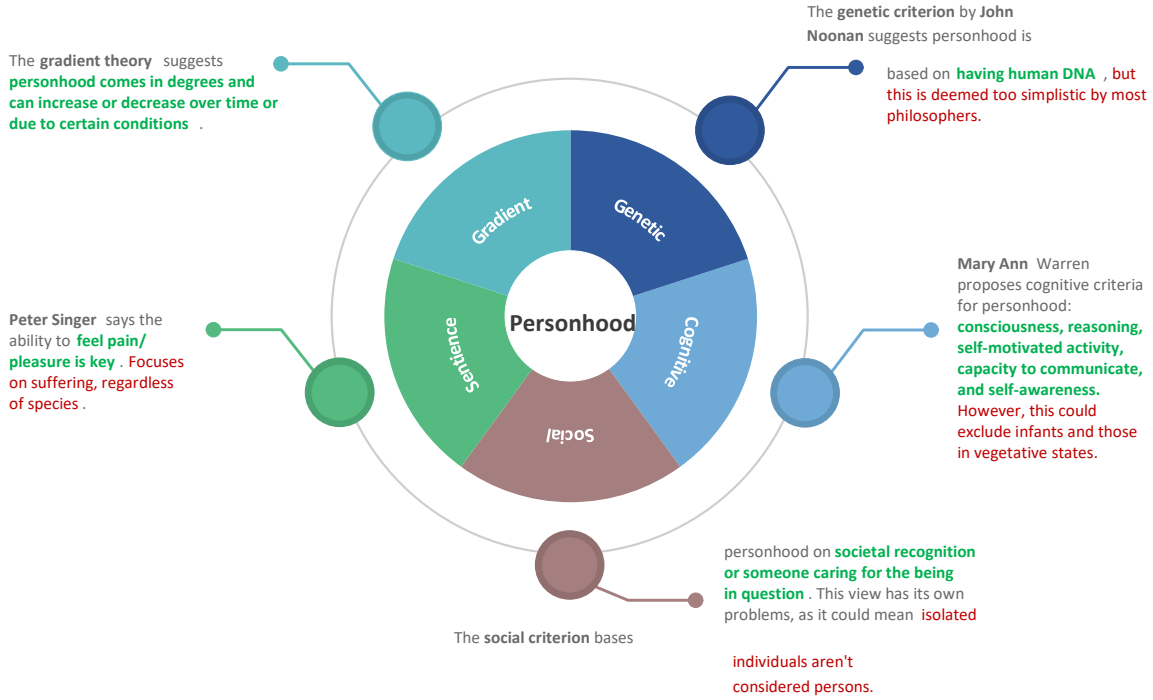

Fig. 1 Personhood criterion as suggested by scholars

with citizenship and legal status. Slaves were often excluded from this category, lacking the rights and privileges afforded to free citizens. Over time, the Judeo-Christian worldview introduced the notion that all humans possessed inherent dignity, yet full legal personhood remained restricted to a subset of the population (Chesterman, 2020). The Enlightenment era brought forth ideas that emphasized individual rights and agency, contributing to a more inclusive understanding of personhood. This period set the stage for later legal reforms that would recognize the universal rights of all humans, culminating in movements to abolish slavery and extend equal rights to all individuals (Kurki, 2019).

The scholarly debates of personhood is shown in Fig. 1. The main criteria discussed include the genetic view that equates personhood with human DNA, the cognitive view that focuses on capacities like consciousness and reasoning, the social view that bases personhood on recognition from others, the sentience view that emphasizes the ability to feel pleasure and

pain, the idea that personhood can be surrendered by criminal acts, and the gradient theory which sees personhood as a spectrum rather than a binary designation. Each perspective has certain advantages and disadvantages - the genetic view is simple but overly inclusive, the cognitive view sets a higher bar that risks excluding some humans, the social view makes personhood too subjective, and so on. Ultimately, there are complex trade offs between these frameworks that impact fundamental questions around who deserves moral consideration ("All Human Beings Are Persons", 2005; Irving, 1993; "When Does a Human Being Become a Person?", 2005).

A Legal Personhood Beyond Humans

The concept of personhood has been extended to non-human entities, raising profound legal and ethical questions. This section explores notable examples of such entities.

a Corporate Personhood

The concept of legal personhood for corporations is a foundational principle in modern economic systems, allowing these entities to own property, enter into contracts, and engage in legal proceedings independently of their human constituents. This legal framework is essential for facilitating complex business operations and for providing a basis for accountability. However, it also raises contentious debates about the scope of corporate rights and responsibilities, particularly in areas such as political contributions and moral accountability. The extent to which a corporation can or should be treated as a "person" in the eyes of the law continues to be a dynamic and evolving issue, reflecting the tension between practical economic considerations and the broader ethical implications of equating non-human entities with individuals in the legal domain.

b Natural Entities as Legal Persons

Several natural entities have been recognized as legal persons in various jurisdictions, reflecting a growing environmental consciousness and indigenous worldviews:

- New Zealand's Whanganui River: Granted legal personhood in 2017, this recognition allows the river to be represented in legal proceedings, aiming to protect its ecological, cultural, and spiritual health (Ryan et al., 2020).
- Ecuador's Rights of Nature: Ecuador's constitution was amended in 2008 to recognize the rights of nature itself, enabling legal actions on behalf of ecosystems (Kauffman & Martin, n.d.).
- India's Legal Personhood for Natural Entities: In a controversial move, an Indian court recognized the Ganges and Yamuna rivers as legal persons, though this decision faced challenges and was stayed by the Supreme Court (Boyd, 2018).

c Other Examples

Indeed, there are instances where legal personhood has been extended to natural entities such as national parks and forests, a move aimed at safeguarding their existence and biodiversity.

In these cases, legal personhood serves as a tool to empower local or indigenous communities, granting them stewardship and recognizing their deep-seated interest in preserving the ecological integrity of these environments. This innovative legal recognition often aligns with indigenous beliefs about the intrinsic value of nature and supports a more sustainable approach to environmental management, ensuring that these natural entities are maintained for both current and future generations.

B Ethical Considerations

The extension of personhood to non-human entities raises critical ethical questions. It challenges us to consider what attributes justify moral consideration and whether personhood should be linked solely to human-like characteristics or encompass broader ecological and cultural values.

The expansion of the concept of personhood beyond humans represents a significant shift in legal and ethical thought. It requires a reevaluation of our traditional frameworks for recognizing intrinsic value and assigning rights. As society progresses, the debate over personhood is likely to intensify, necessitating careful consideration of how we define and protect the rights of all entities within our legal systems.

CURRENT STATE OF AI

From its theoretical inception in Alan Turing's landmark 1950 paper âAIJComputing Ma-ˇ chinery and IntelligenceâAˇ ˙I to today's cutting-edge language models and self-driving cars, the evolution of Artificial Intelligence (AI) has been a breathtaking journey of innovation (Turing, 2009). Early AI systems explored symbolic reasoning and natural language, laying the groundwork for breakthroughs in areas like expert systems and game-playing AI. This evolution has been propelled by significant strides in machine learning algorithms, driven by neural networks and fueled by ever-increasing data and computational power. Today, AI permeates numerous facets of our lives, raising profound questions and transforming industries. The evolution of AI is shown in Fig. 2.

A Origin of AI

Here is an overview of the evolution of AI technology through different phases (Cordeschi, 2007).

a Foundational Phase

In the 1950s, pioneers like Alan Turing established the theoretical foundations of AI through concepts like the Turing test. Programs like ELIZA in the 1960s demonstrated the possibility of computer systems holding natural language conversations. Though extremely basic by today's standards, these were the first steps towards machines that could potentially mimic human intelligence.

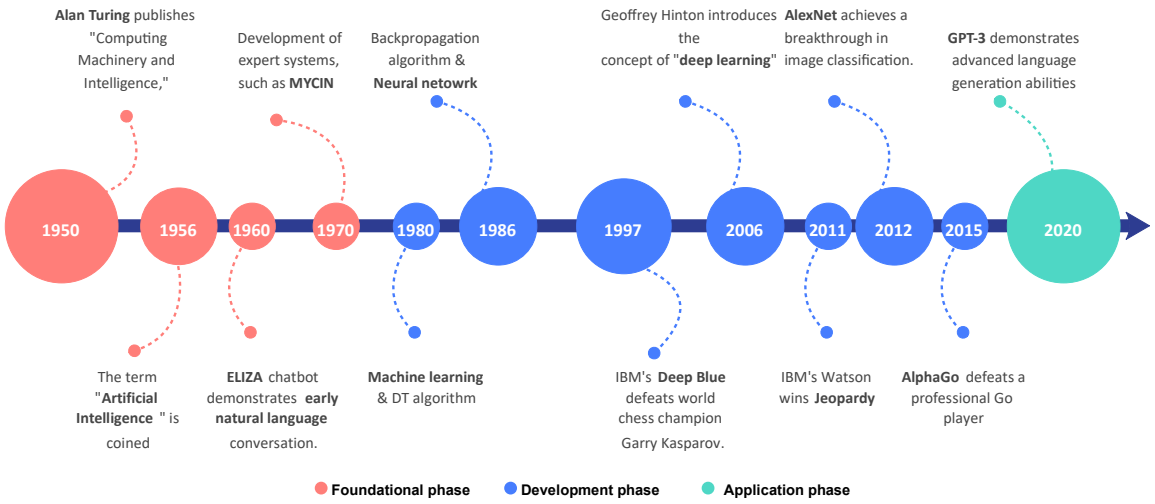

Fig. 2 The journey of AI through different phases till current date

b Development Phase

Starting in the 1970s and accelerating through the 80s and 90s, researchers developed practical AI applications like expert systems as well as better algorithms for core technologies like neural networks. While early progress was slow, this experimental period set the groundwork for the coming breakthroughs in the 2000s. Demonstrations like Deep Blue in chess and Watson in Jeopardy! showed AI systems matching and surpassing human performance in narrow domains.

c Application Phase

The rapid advancement of deep learning since 2012 has now made AI transformational in real-world usage. Technologies like computer vision, language processing, recommendation systems and more are being applied across finance, healthcare, transportation, social media and other industries. Systems like GPT-3 display impressively advanced language abilities. In the 2020s, AI technology has become mainstream - powering everything from search engines to autonomous vehicles.

B Current state of AI

Today, AI is ubiquitous and continues to advance rapidly. It has become an integral component in many technologies that affect our daily lives. AI systems are getting better at understanding and generating human language, recognizing images and sounds, and making decisions in increasingly complex environments. They are being deployed to personalize education, enhance customer service, improve healthcare diagnostics, and optimize logistics. The current state of AI is also marked by its integration with other emerging technologies like the Internet of Things (IoT), blockchain, and edge computing. This convergence is leading to new innovations like smart cities, autonomous vehicles, and personalized medicine. However, with these advancements come challenges related to ethics, privacy, security, and the future of employment. The field is grappling with questions about how to ensure AI is developed and used responsibly. There's also an ongoing effort to make AI more explainable and transparent so that its decision-making processes can be understood and trusted by humans. As AI continues to evolve, it will likely push the boundaries of what machines are capable of, creating both opportunities and challenges for society to navigate.

Legal Personhood for AI Systems

The rapid advancement of artificial intelligence (AI) challenges the traditional boundaries of legal responsibility and personhood. As AI systems become more autonomous and integrated into various aspects of society, the question arises: should these systems be subject to lawful responsibilities, endowed with rights and duties, and perhaps even granted a form of legal personhood? This paper argues in favor of a framework that recognizes the evolving capabilities of AI systems and adapts our legal structures accordingly.

A Human versus AI: Capabilities and Legal Boundaries

As we transition into an era where artificial intelligence (AI) systems become more integrated into our daily lives, it is crucial to understand the capabilities of AI in relation to humans and the legal framework that governs them. Fig. 3 illustrates the current state of capabilities and lawful responsibilities attributed to humans and AI. Humans possess both the capabilities and the legal responsibilities outlined in the figure. These responsibilities range from the duty to obey laws to the right to privacy and the right to life. Furthermore, humans are accountable for their actions, can enter into contracts, and have the right to sue or be sued, reflecting a complex legal framework that governs human behavior and societal interactions.

On the other hand, AI systems are rapidly acquiring capabilities that were once thought to be uniquely human. As depicted in Fig. 3, AI can now perform complex calculations, understand and use language, solve problems, and even exhibit creativity. However, despite these advancements, AI lacks legal responsibilities. It does not have the duty to pay taxes,

the right to life, or any of the other lawful responsibilities that apply to humans. The absence of legal boundaries for AI raises important questions about accountability, particularly when AI actions result in outcomes that would require legal intervention if performed by a human. As AI continues to evolve, there is a growing discourse on whether it should be ascribed certain legal responsibilities or rights, akin to those of humans. Should AI systems be treated as legal entities? Who is responsible when an AI system causes harm? These are pressing questions that need to be addressed to ensure the responsible development and integration of AI into society.

B Legal Personhood and the Chaotic Nature of AI Systems

Artificial Intelligence (AI) systems, with their increasing integration into various sectors of society, prompt significant discussions on their legal status and responsibility. Chaos theory,

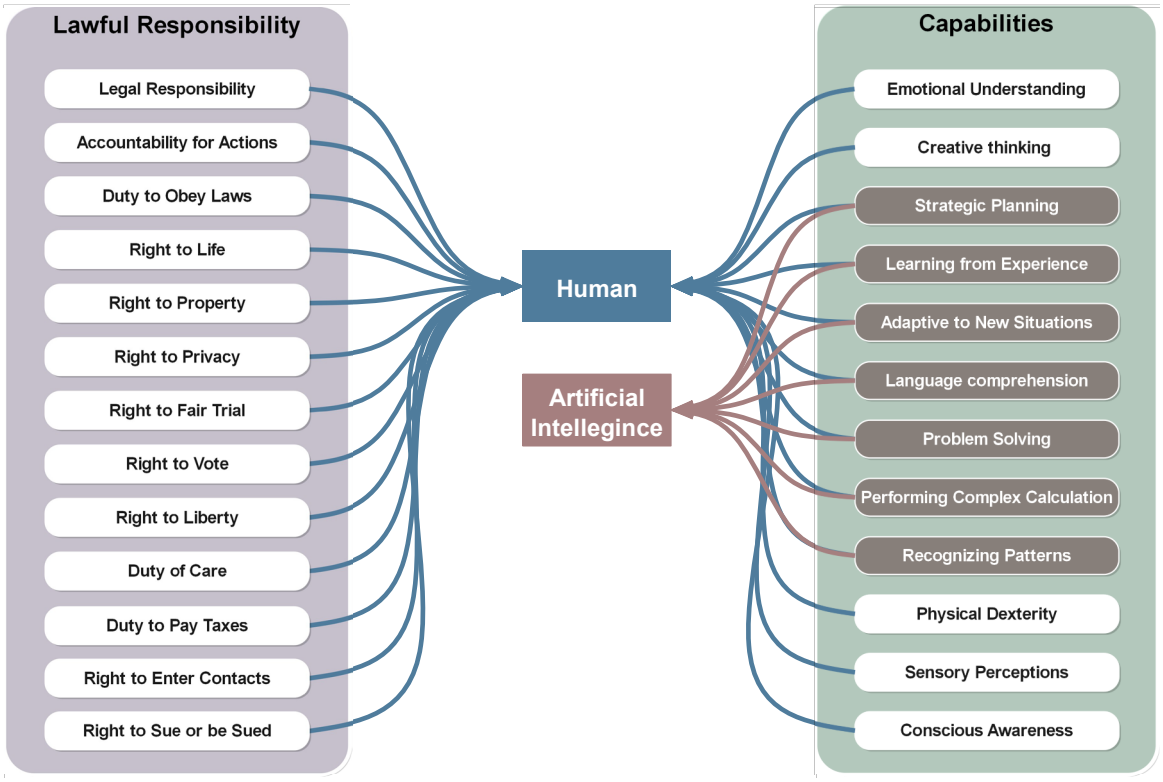

Fig. 3 Capabilities VS legal boundaries for Human VS AI

a branch of mathematics and physics, delves into the unpredictability of complex systems. It is predicated on the principle that even small changes in initial conditions can lead to vastly different outcomes, a phenomenon famously encapsulated in the "butterfly effect"

(Griffiths et al., 1991). The chaotic and unpredictable nature of AI decisions, explained by chaos theory, complicates the assignment of legal personhood to AI entities. This unpredictability mirrors the behavior of dynamical systems that are highly sensitive to initial conditions, leading to vastly different outcomes and making prediction challenging.

The application of chaos theory to AI is especially relevant in systems involving machine learning, where AI, driven by complex algorithms and extensive data sets, can exhibit behavior that is unpredictable due to the non-linearities inherent in their learning processes. This is evident in a variety of contexts, from autonomous vehicle decisions to neural network outputs, highlighting the chaotic and often inexplicable nature of AI decision-making processes.

Such unpredictability presents considerable challenges for legal frameworks that are built on the notions of predictability and responsibility. As AI systems operate with a level of autonomy and unpredictability, it becomes challenging to determine liability and assign responsibility when AI behaves in unexpected ways. The discussion on AI as legal entities centers on whether AI should be granted some form of legal personhood. This status could enable AI systems to own property, enter contracts, and be subject to legal claims, similar to corporations. To address the risks associated with the unpredictable nature of AI, regulations are necessary. These could include requirements for transparency in AI decision-making processes, standards for ethical AI use, and mechanisms for redress when AI actions result in harm.

The Hypothetical Scenario: AI with Legal Per-sonhood

The notion of granting legal personhood to AI systems is a subject of increasing interest and debate. Legal personhood would not imply that AI systems are human, but rather that they could be given a set of rights and responsibilities tailored to their capacities and functions within society. This subsection explores the potential legal attributes and ramifications of such a scenario. The transition of AI into entities with legal personhood necessitates a recal-

Legal Attribute	Human	AI Currently	AI if Granted Legal Personhood
Legal Responsibility for Own Actions	✓	✗	✓*
Accountability to Legal Standards	✓	✗	✓*
Duty to Obey Laws and Regulations	✓	✗	✓*
Right to Own Property	✓	✗	✓*
Right to Privacy	✓	✗	✗*
Liability for Damages Caused	✓	✗	✓*

Ability to Enter into Contracts	✓	✗	✓*
Ability to Hold Patents	✓	✗	✓*
Subject to Taxation	✓	✗	✗*
Right to Sue or Be Sued	✓	✗	✓*
Right to Employment	✓	✗	✗*
Duty to Not Harm Others	✓	✗	✓*
Right to Receive a Fair Trial	✓	✗	✗*
Right to Vote	✓	✗	✗*

Table 1 Comparison of legal attributes between humans and Current AI versus hypothetical AI if granted personhood

ibration of our legal system to accommodate non-human actors with autonomous decisionmaking capabilities. Table 1 delineates a range of legal attributes that could potentially apply to AI, highlighting the contrast between current AI capabilities and the hypothetical legal standing of AI with personhood. Some of the possible benefits of the proposed hypothetical scenarios are stated -

- Legal Responsibility for Own Actions: If AI systems are to make autonomous decisions, they should, hypothetically, be responsible for the consequences of these decisions, similar to how corporations are held accountable today.
- Accountability to Legal Standards: With personhood, AI systems would be expected to adhere to established legal and ethical standards, necessitating mechanisms for enforcement and compliance.
- Contractual and Property Rights: The ability to enter into contracts and hold property could allow AI systems to participate in economic activities, potentially stimulating innovation but also raising complex issues around ownership and control.
- Privacy and Liability: Questions of privacy and liability would take on new dimensions, as AI systems with personhood might require data protection, and their actions could result in legal disputes.
- Taxation and Legal Recourse: If AI systems generate economic value, they could be subject to taxation. Additionally, granting them the right to sue or be sued would establish a legal recourse for resolving disputes.

The discussion around endowing artificial intelligence (AI) systems with legal personhood has elicited numerous ethical, legal, and social concerns. This document outlines key concerns identified in the literature.

A Concerns Identified

1. Moral and Legal Troublesomeness: Granting legal personhood to synthetic entities is considered both morally unnecessary and legally troublesome. Challenges in ensuring accountability of "electronic persons" significantly outweigh the benefits that AI legal personhood might offer (Bryson et al., 2017).
2. Prematurity and Uncertainty: The current stage of AI development makes the proposal for AI Personhood premature. The scope of AI is ill-defined, and the economic, moral, and social implications are yet to be fully understood (Zevenbergen & Finlayson, 2018).
3. Differentiation and Recognition Challenges: Distinguishing between various forms of legal personhood, especially involving spontaneous intelligence, poses significant recognition challenges (Chen & Burgess, 2019).
4. Human Dignity and Safety: The potential impact on human dignity and safety is a critical concern. The creation of selfish memes and the possibility of legal system hacking by AI entities pose significant risks (Yampolskiy, 2018).
5. Ethical and Societal Considerations: The ethical desirability and societal impacts of granting legal personhood to AI are major points of critique. The debate requires a more inclusive approach that considers diverse philosophical perspectives (Naidoo, 2022).

These concerns underscore the complexity of the AI legal personhood issue and highlight the need for a cautious, well-informed, and inclusive approach to its potential implementation.

Conclusion

This study embarked on an exploration of the burgeoning intersection between artificial intelligence (AI) and the legal framework, specifically focusing on the intriguing prospect of granting AI systems some form of legal personhood. Throughout the discourse, we examined the historical evolution of personhood, the rapid advancements in AI technology, and the ethical and legal quandaries that arise as AI systems become increasingly autonomous and integrated into the fabric of society. Our analysis, grounded in both philosophical debates and the current state of AI, underscored the complexity of attributing legal personhood to AI. The hypothetical scenarios and comparative analysis presented in this paper illuminate the profound implications such legal recognition could entail, from the assignment of responsibility and accountability to the rights to own property, enter contracts, and even participate in legal actions.

However, the journey towards legal personhood for AI is fraught with challenges. The unpredictable nature of AI, illustrated through the lens of chaos theory, raises significant concerns about accountability and the feasibility of establishing a comprehensive legal

framework that adequately addresses these complexities. Moreover, the ethical considerations of extending personhood beyond humans underscore the need for a cautious, deliberative approach that respects human values and societal norms.

The domain of AI legal personhood should pivot around three pivotal axes to ensure balanced advancement. Firstly, the development of dynamic legal frameworks is imperative, requiring the creation of adaptable legal structures that can evolve in tandem with the rapid development of AI technology. This involves crafting flexible legal mechanisms that ensure laws remain both relevant and effective in the face of technological progress. Secondly, given the global nature of AI technology, there's a pressing need for international consensus and legislation. This entails conducting comparative studies on international legal systems and striving towards harmonizing AI regulations, aiming to establish a unified global stance on AI personhood. Thirdly, the advancement of AI capabilities brings to the fore increasingly complex ethical considerations. Future research must engage deeply with the development of ethical frameworks that guide the creation and implementation of AI systems, ensuring these systems are designed to uphold human dignity and contribute positively to societal welfare. Addressing these areas in future work will be crucial for navigating the challenges and opportunities presented by integrating AI into our legal and societal structures.

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